

## CLAIMS

1. A DNA array for detecting a single nucleotide polymorphism of a gene, which comprises, on a solid support,

5 a first probe spots group consisting of one or more probe spots each containing one or more probes hybridizable with a polynucleotide of the gene, in which the probes are exactly complementary to the first polymorphism pattern of the gene, and

10 a second probe spots group consisting of one or more probe spots each containing one or more probes hybridizable with the polynucleotide of the gene, in which the probes are exactly complementary to the second polymorphism pattern of the gene,

wherein probe lengths in the probe spots is different from each other.

15 2. The DNA array of claim 1, wherein the first probe spots group and the second probe spots group each consists of from 2 to 10 probe spots.

20 3. The DNA array of claim 2, wherein from 2 to 10 probe spots are arranged in the order of the probe length.

4. A kit for detecting a single nucleotide polymorphism of a gene, the kit comprising at least the DNA array of any one of claims 1 to 3.

25 5. A method for detecting a single nucleotide polymorphism of a gene, which uses the DNA array of any one of claims 1 to 3, and comprises the following steps of,

(a) preparing a labeled polynucleotide from the gene;

(b) contacting the labeled polynucleotide with the DNA array; and

30 (c) measuring signals from the labeled polynucleotide hybridized

with the probes on the DNA array.

6. The method for detecting the single nucleotide polymorphism according to claim 5, wherein in the step (c) the respective signals of the first probe spots group and the second probe spots group are compared.

7. A method for determining an appropriate probe length for detecting a single nucleotide polymorphism of a gene, which uses the DNA array of any one of claims 1 to 3, comprises the following steps of,

(a) preparing a labeled polynucleotide from the gene;  
(b) contacting the labeled polynucleotide with the DNA array; and  
(c) measuring signals from the labeled polynucleotide hybridized with each probe on the DNA array, and

determining a probe length satisfying the following criteria as an appropriate probe length for detecting the single nucleotide polymorphism of the gene:

(i) the signal is observed in the first probe spot group in the case of the gene being homozygotic first polymorphism pattern,

(ii) the signal is observed in the second probe spot group in the case of the gene being homozygotic second polymorphism pattern, and

(iii) the signals of the same extent are observed in both of the first probe spot group and the second probe spot group in the case of the gene being heterozygotic polymorphism pattern.

8. A DNA array for detecting a single nucleotide polymorphism of a gene, which comprises, on a solid support,

a first probe spot containing one or more probes exactly complementary to the first polymorphism pattern of the gene, and

a second probe spot containing one or more probes exactly complementary to the second polymorphism pattern of the gene,

wherein the probe length is one determined by the method of claim

7.